

WHAT IS CLAIMED IS:

1. An optical film comprising:

a transparent film;

an adhesive layer provided on one surface of said

5 transparent film, said adhesive layer having a refractive index different by 0.1 or less from a refractive index of a layer of said one surface of said transparent film; and

a repetitive prismatic structure provided on the other surface of said transparent film, said repetitive prismatic  
10 structure having optical path changing slopes aligned in a substantially constant direction at an inclination angle in a range of from 35 to 48 degrees with respect to a plane of said transparent film.

15 2. An optical film according to claim 1, wherein said optical path changing slopes are constituted by at least two kinds of slopes in which one kind of slopes aligned in a substantially constant direction serve as a reference while the other kind of slopes are aligned substantially in a direction  
20 which is opposite to said one kind of slopes; and wherein said adhesive layer is covered with a strip sheet.

3. An optical film according to claim 1, wherein said inclination angle of each of said optical path changing slopes  
25 with respect to said film plane is in a range of from 38 to

45 degrees.

4. An optical film according to claim 1, wherein said optical path changing slopes are formed based on a structure of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

5. An optical film according to claim 1, wherein said optical path changing slopes are formed based on a structure of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

6. An optical film according to claim 1, wherein a projected area, onto said film plane, of flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane is not smaller than 10 times as large as a projected area, onto said film plane, of slopes each having an inclination angle of not smaller than 35 degrees with respect to said film plane.

20

7. An optical film according to claim 1, wherein said prismatic structure includes optical path changing slopes each having an inclination angle in a range of from 38 to 45 degrees with respect to said film plane, and flat surfaces each having an inclination angle of not larger than 5 degrees with respect

to said film plane; wherein a projected width of each of said flat surfaces onto said film plane is not smaller than 10 times as large as a projected width of each of said optical path changing slopes onto said film plane; and wherein said prismatic structure is formed into continuous grooves each of which is shaped substantially like a triangle in section and each of which is extended from one end of said film to the other end thereof.

8. An optical film according to claim 1, wherein said prismatic structure having optical path changing slopes is formed into discontinuous grooves each shaped substantially like polygon such as a triangle, a tetragon, a pentagon in section; wherein a length of each of said discontinuous grooves is not smaller than five times as large as a depth of each of said discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves at an inclination angle in a range of from 38 to 45 degrees with respect to said film plane; and wherein a projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.

9. An optical film according to claim 1, wherein a reflection layer is disposed closely on a surface of said film on which said prismatic structure having said optical path changing slopes is formed.

10. An optical film according to claim 1, wherein  
ridgelines of said optical path changing slopes are parallel  
to or inclined within an angle range of  $\pm 30$  degrees with respect  
5 to one side of said transparent film.

11. An optical film according to claim 1, wherein said  
adhesive layer is of a light diffusion type.

10 12. An optical film comprising:  
a transparent film having a refractive index of not lower  
than 1.49;

transparent adhesive means provided on one surface of  
said transparent film, said transparent adhesive means having  
15 a refractive index of not lower than 1.49; and

a repetitive prismatic structure provided on the other  
surface of said transparent film, said repetitive prismatic  
structure having optical path changing slopes aligned in a  
substantially constant direction at an inclination angle in  
20 a range of from 35 to 48 degrees with respect to a plane of  
said transparent film.

13. An optical film according to claim 12, wherein said  
optical path changing slopes are constituted by at least two  
25 kinds of slopes in which one kind of slopes aligned in a

substantially constant direction serve as a reference while the other kind of slopes are aligned substantially in a direction which is opposite to said one kind of slopes.

5           14.    An optical film according to claim 12, wherein said adhesive means is a tacky layer.

15           15.    An optical film according to claim 12, wherein said inclination angle of each of said optical path changing slopes  
10 with respect to said film plane is in a range of from 38 to 45 degrees.

15           16.    An optical film according to claim 12, wherein said optical path changing slopes are formed based on a structure  
15 of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

20           17.    An optical film according to claim 12, wherein said optical path changing slopes are formed based on a structure  
20 of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

25           18.    An optical film according to claim 12, wherein said repetitive prismatic structure further includes flat surfaces  
25 each of which is inclined at an inclination angle of not larger

than 5 degrees with respect to said film plane, and wherein  
a projected width of each of said flat surfaces onto said film  
plane is not smaller than 10 times as large as a projected width  
of each of said optical path changing slopes onto said film  
5 plane.

19. An optical film according to claim 12, wherein said  
prismatic structure is constituted by optical path changing  
slopes each inclined at an inclination angle in a range of from  
10 38 to 45 degrees with respect to said film plane, and flat surfaces  
each inclined at an inclination angle of not larger than 5 degrees  
with respect to said film plane and each having a width of each  
of said flat surfaces is not smaller than 10 times as large  
as a width of each of said optical path changing slopes; and  
15 wherein said prismatic structure is constituted by continuous  
grooves each of which is shaped substantially like a triangle  
in section and each of which is extended from one end of said  
film to the other end thereof.

20 20. An optical film according to claim 12, wherein said  
prismatic structure including optical path changing slopes is  
constituted by discontinuous grooves each shaped substantially  
like a polygon such as a triangle, a tetragon or a pentagon  
in section; a length of each of said discontinuous grooves is  
25 not smaller than 5 times as large as a depth of each of said

discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves at an inclination angle in a range of from 38 to 45 degrees with respect to said film plane; and wherein a projected area  
5 of said discontinuous grooves onto an area of said film plane is not larger than 10%.

21. An optical film according to claim 12, wherein a reflection layer is disposed closely on a surface of said film  
10 on which said prismatic structure including said optical path changing slopes is formed.

22. An optical film according to claim 12, wherein ridgelines of said optical path changing slopes are parallel  
15 to or inclined within an angle range of  $\pm 30$  degrees with respect to one side of said transparent film.

23. An optical film according to claim 12, wherein said adhesive means is covered with a strip sheet.  
20

24. An optical film according to claim 12, wherein said adhesive means is of a light diffusion type.

25. A liquid-crystal display device comprising an  
25 optical film according to claim 12.

26. An optical film comprising:

a transparent film having an average in-plane retardation not larger than 30 nm;

an adhesive layer provided on one surface of said transparent film, said adhesive layer having a refractive index different by 0.12 or less from a refractive index of a layer of said one surface of said transparent film; and

a repetitive prismatic structure provided on the other surface of said transparent film, said repetitive prismatic structure having optical path changing slopes aligned in a substantially constant direction at an inclination angle in a range of from 35 to 48 degrees with respect to a plane of said transparent film.

27. An optical film according to claim 26, wherein said optical path changing slopes are constituted by at least two kinds of slopes in which one kind of slopes aligned in a substantially constant direction serve as a reference while the other kind of slopes are aligned substantially in a direction which is opposite to said one kind of slopes; and wherein said adhesive layer is covered with a strip sheet.

28. An optical film according to claim 26, wherein said transparent film has an average thicknesswise retardation of not larger than 50 nm.



29. An optical film according to claim 26, wherein said transparent film has an average in-plane retardation of not larger than 20 nm and an average thicknesswise retardation of not larger than 30 nm.

5

30. An optical film according to claim 26, wherein said inclination angle of each of said optical path changing slopes with respect to said film plane is in a range of from 38 to 45 degrees.

10

31. An optical film according to claim 26, wherein said optical path changing slopes are formed based on a structure of grooves each shaped substantially like an isosceles triangle or any other triangle in section.

15

32. An optical film according to claim 26, wherein said optical path changing slopes are formed based on a structure of grooves or protrusions each shaped substantially like a tetragon or a pentagon in section.

20

33. An optical film according to claim 26, wherein a projected area, onto said film plane, of flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane is not smaller than 10 times as large as a projected area, onto said film plane, of slopes each having

25

an inclination angle of not smaller than 35 degrees with respect to said film plane.

34. An optical film according to claim 26, wherein said  
5 prismatic structure includes optical path changing slopes each having an inclination angle in a range of from 38 to 45 degrees with respect to said film plane, and flat surfaces each having an inclination angle of not larger than 5 degrees with respect to said film plane; wherein a projected width of each of said  
10 flat surfaces onto said film plane is not smaller than 10 times as large as a projected width of each of said optical path changing slopes onto said film plane; and wherein said prismatic structure is formed into continuous grooves each of which is shaped substantially like a triangle in section and each of which is  
15 extended from one end of said film to the other end thereof.

35. An optical film according to claim 26, wherein said prismatic structure having optical path changing slopes is formed into discontinuous grooves each shaped substantially  
20 like polygon such as a triangle, a tetragon, a pentagon in section; wherein a length of each of said discontinuous grooves is not smaller than five times as large as a depth of each of said discontinuous grooves; wherein said optical path changing slopes are formed in a direction of the length of said grooves  
25 at an inclination angle in a range of from 38 to 45 degrees

with respect to said film plane; and wherein a projected area of said discontinuous grooves onto an area of said film plane is not larger than 10%.

5           36.    An optical film according to claim 26, wherein a reflection layer is disposed closely on a surface of said film on which said prismatic structure having said optical path changing slopes is formed.

10           37.    An optical film according to claim 26, wherein ridgelines of said optical path changing slopes are parallel to or inclined within an angle range of  $\pm 30$  degrees with respect to one side of said transparent film.

15           38.    An optical film according to claim 26, wherein said adhesive layer is of a light diffusion type.